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Attorney Docket No.: 4925-64

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UTILITY PATENT APPLICATION TRANSMITTAL

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Assistant Commissioner for Patents
BOX PATENT APPLICATION
Washington, DC 20231

Dated: October 30, 2000

Sir:

Transmitted herewith for filing is the utility patent application of:

Inventor(s): Jukka HEISKA

For: Content Converter Portal

Enclosed are:

- Transmittal letter (**2x**) with Fee Computation Sheet
- General Authorization For Payment of Fees (**2x**)
- Title Page, Specification, Claims 1 to 14 & Abstract (13 pages [total number of pages of application])
- Unexecuted Declaration and Power of Attorney (2 p.)
- 3 sheet(s) of drawing(s) (Figs. 1 to 3)
- Check for \$ 710 for filing fee
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Any additional filing fees required under 37 CFR 1.16.

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[x] Any filing fees under 37 CFR 1.16 for presentation of extra claims.

[] Priority is claimed for this invention and application, corresponding applications having been filed in on , No. , respectively.

Respectfully submitted,
COHEN, PONTANI, LIEBERMAN & PAVANE

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By Express Mail #EL690385776US

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BOX PATENT APPLICATION
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Dated: October 30, 2000

In re Application of: Jukka HEISKA
For: Content Converter Portal

The filing fee has been calculated as shown below:

FOR:	Col. 1	Col. 2	SMALL ENTITY	OTHER THAN SMALL ENTITY
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<input type="checkbox"/> MULTIPLE DEPENDENCY			+\$135 = \$	+ 270 \$
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**APPLICATION FOR UNITED STATES
LETTERS PATENT**

CONTENT CONVERTER PORTAL

Inventor:

Jukka HEISKA

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to wireless devices connected to the Internet, and particularly to conversion of content among a variety of wireless devices connected via the Internet to a wide variety of content providers.

2. Description of the Related Art

As wireless communication devices become more common and become adapted for data communication as well as voice communication, Wireless Application Protocol (WAP) has been specified for data applications by leading telecom and software vendors. A goal of the WAP specification has been to create an open standard that will enable creation of value-added services that can be used with wireless terminals and with server products from various vendors.

The WAP specification defines a set of content formats that are used in creation of the wireless services. In principle, WAP enables content conversion from existing Internet content formats to WAP-defined content formats. Also, since WAP is intended to be an open specification, in principle it ensures that content written according to its specifications will be usable on various terminal types from various manufacturers.

However, it has been found that in practice it is very difficult to ensure usability of services when content is converted among various formats and as various terminals implement browser characteristics in different ways. Thus, difficulties arise from differences among the

capabilities of various languages used in content creation, and differences among various types of mobile terminals (e.g., different screen sizes and layouts, input methods, processing capabilities, etc.). Furthermore, a user might prefer individual or idiosyncratic variations in content format.

5 There is thus a need to adjust conversion of content according to a user's terminal type and according to the user's individual preferences.

SUMMARY OF THE INVENTION

In a system comprising a data network with at least one content server and at least one gateway connected to it and including a mobile telephone network for communicating between mobile terminals and the gateway, the invention provides a content converter 5 accessible to the network and a method of routing data content through the content converter where it is adjusted according to previously uploaded indications of characteristics of a mobile terminal and then forwarded to a gateway for forwarding to the mobile terminal.

In an aspect of the invention, data content is in WAP format.

In another aspect of the invention, the data network is a wide-area network (WAN).

In another aspect of the invention, the data network is the Internet.

In another aspect of the invention, content is further adjusted according to previously uploaded indications of user preferences.

15

Other objects and features of the present invention will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims. It should be further understood that the drawings are not necessarily drawn to scale and that, unless otherwise indicated, they are merely intended to conceptually illustrate the structures and procedures described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, wherein like reference numerals denote similar elements:

Fig. 1 is a network diagram showing mobile terminals communicating through WAP

providers to the Internet in a conventional manner;

5 Fig. 2 is a network diagram in which is introduced mobile terminals communicating through WAP providers to the Internet according to the present invention; and

Fig. 3 illustrates data flow through particular ones of the elements depicted in Fig. 2.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

Fig. 1 is a network diagram illustrating mobile devices communicating over the

intent to content providers in a conventional manner. A plurality of users are each equipped with mobile terminals 100. Three such terminals are shown, and a dotted line is employed in Fig. 1 to connote that a larger number may actually exist. Associated with each mobile terminal 100 is terminal characteristics 102 and user preferences 104. A mobile terminal 100 may communicate over mobile telephone network 10 to another mobile terminal 100 or to a WAP provider 200.

Those in the art appreciate that a WAP provider 200 may be organized either as a proxy or as a gateway. WAP providers 200 communicate via Internet 20 with content providers 300, such as web servers. Content from a content provider 300 is typically returned in wireless markup language (WML) format, perhaps translated to WML at the provider 300 from the hypertext markup language (HTML) typically provided to wired terminals on the Internet 20. Conversion of the content for delivery to mobile devices 100 is accomplished by content converters 202 associated with WAP providers (gateways or proxies) 200. Content converters 202 provide encoding and decoding for efficient data transmission and deliver content via mobile telephone network 10 to mobile terminals 100 in a form that should be intelligible on a broad range of device types; the content, however, may not be entirely appropriate for certain device types, and may not conform with user preferences.

Fig. 2 is a network diagram wherein some of the WAP proxies and gateways are provided

according to the present invention. A number of prior-art WAP providers 200 may still exist, but Fig. 2 is distinguished by the addition of WAP providers 210 and of central content converter

400. WAP providers 210 do not need to be equipped with content converters 202. Content converter 400 is addressable by a uniform resource locator (URL) and thus is accessible to mobile terminals 100 as a centralized network resource. Mobile terminals 100 upload terminal characteristics and user preferences to central content converter 400. User preferences may be 5 uploaded according to a current usage scenario, or may be preloaded and then selected according to a current scenario.

Fig. 3 depicts content flow according to the prior art and according to the present invention. A particular one of mobile terminals 100, here designated 100-1, is in communication through mobile network 10 to a particular one of WAP providers 200, designated 200-1, which in 10 turn is in communication through Internet 20 with a particular content provider 300-1. Content requested from 300-1 is sent via Internet 20 to WAP provider 200-1 which employs its internal content converter 202. Content, put in generic WAP format by content converter 202, is passed through mobile phone network 10 to mobile device 100-1.

Another particular mobile terminal 100-2 is making use of the present invention. The user 15 of terminal 100-2 would previously have uploaded to central content converter 400 a profile of characteristics 102-2 of the particular terminal 100-2 which are stored in database 402, along with characteristics of other terminals 100 that are using the invention. Similarly, the user of terminal 100-2 has previously uploaded to content converter 400 a profile of preferences 104-2, which are stored in database 404 along with preferences of other users of terminals 100 using the invention.

20 The user of mobile terminal 100-2 requests content from content provider 300-2. The requested content is forwarded from content provider 300-2 via Internet 20 to central content

converter 400. The content is nominally in a form which might produce an intelligible display on user terminal 100-2, but as previously noted the particular characteristics of some terminals may not be cooperative. Also, the user may prefer a format other than that preordained in the content. Central content converter 400 adjusts the content according to the profile of terminal 5 characteristics 102-2 stored in database 402, and according to the profile of user preferences 104-2 stored in database 404, and forwards the content through Internet 20 to WAP provider 210-2, which in turn forwards the content through the wireless telephone network 10 to user terminal 100-2.

10 The present invention permits vendors to introduce new forms of content with no need to distribute appropriate conversion programs to a plurality of WAP servers. The conversion can simply be incorporated into central content converter 400.

15 Thus, while there have been shown and described and pointed out fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitutions and changes in the form and details of the devices illustrated, and in their operation, may be made by those skilled in the art without departing from the spirit of the invention. For example, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results are within the scope of the invention. Moreover, it should be recognized that structures and/or elements and/or method steps shown 20 and/or described in connection with any disclosed form or embodiment of the invention may be incorporated in any other disclosed or described or suggested form or embodiment as a general

matter of design choice. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

CLAIMS

We I claim:

1 1. A method for providing data services to mobile devices in a system comprising a
2 data network, at least one content server accessible via the data network, at least one gateway for
3 accessing the data network, a mobile telephone network for communicating between the mobile
4 devices and said at least one gateway, and a content converter connected to the data network, the
5 method comprising:

6 uploading to the content converter and storing therewith indications of the characteristics
7 of each terminal device;
8 routing content for a particular mobile terminal from said at least one content server to the
9 content converter;
10 adjusting content for the particular mobile terminal in the content converter according to
11 the stored characteristics of the mobile terminal; and
12 routing the adjusted content through the data network to said at least one gateway for
13 forwarding to said particular mobile terminal.

1 2. The method of claim 1 wherein the content is in wireless application protocol
2 (WAP) format.

1 3. The method of claim 1, wherein the data network is a wide-area network (WAN).
1 4. The method of claim 3, wherein the WAN is the Internet.

1 5. The method of claim 1, further including the step of uploading to the content
2 converter and storing therewith indications of preferences of the user of each terminal device, and
3 wherein the step of adjusting content is according to said stored preferences of the user.

1 6. The method of claim 5, wherein content is adjusted in accordance with a
2 preference currently entered by the user and stored.

1 7. The method of claim 5, wherein content is adjusted in accordance with a
2 preference previously stored and currently selected by the user.

1 8. Apparatus for providing data services to mobile devices in a system comprising a
2 data network, at least one content server accessible via the data network, at least one gateway for
3 accessing the data network, a mobile telephone network for communicating between the mobile
4 devices and said at least one gateway, and a content converter connected to the data network,
5 the apparatus comprising:

6 a data store associated with the content converter for storing indications of the

7 characteristics of each terminal device;

8 receiving means at the content converter for receiving content for a particular mobile

9 terminal from said at least one content server;

10 logic for adjusting content for the particular mobile terminal in the content converter

11 according to the stored characteristics of the mobile terminal; and

12 sending means for routing the adjusted content through the data network to said at least

13 one gateway for forwarding to said particular mobile terminal.

1 9. The apparatus of claim 8 wherein the content is in wireless application protocol
2 (WAP) format.

1 10. The apparatus of claim 9, wherein the data network is a wide-area network
2 (WAN).

1 11. The apparatus of claim 10, wherein the WAN is the Internet.

1 12. The apparatus of claim 7, wherein the data store further stores indications of
2 preferences of the user of each terminal device, and wherein the logic adjusts content in
3 accordance with stored preferences of the user.

1 13. The apparatus of claim 12, wherein the logic adjusts content in accordance with a
2 preference currently entered by the user and stored.

1 14. The apparatus of claim 12, wherein the logic adjusts content in accordance with a
2 preference previously stored and currently selected by the user.

ABSTRACT OF THE DISCLOSURE

A system including a data network for providing Wireless Application Protocol (WAP) data to wireless terminals from a selection of content servers connected to the data network through a plurality of WAP gateways connected to the data network includes a content converter accessible as a centralized network resource. Characteristics of each wireless terminal and preferences of the user of each wireless terminal are uploaded to the central content converter and stored there. Content provided by a content server is routed through the data network to the central converter for adjustment according to the stored characteristics and preferences, and further routed through the data network to a particular wireless terminal.

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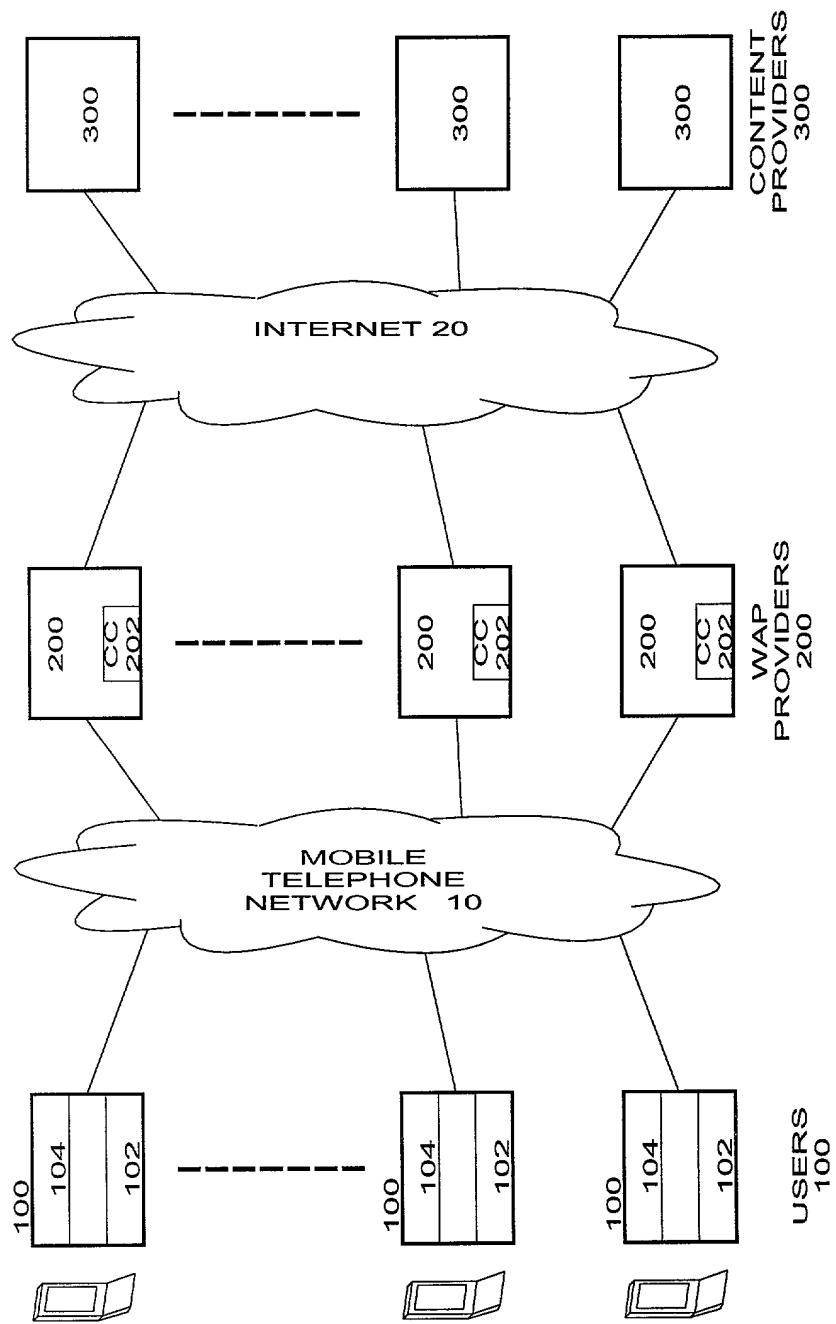


Fig. 1 (Prior Art)

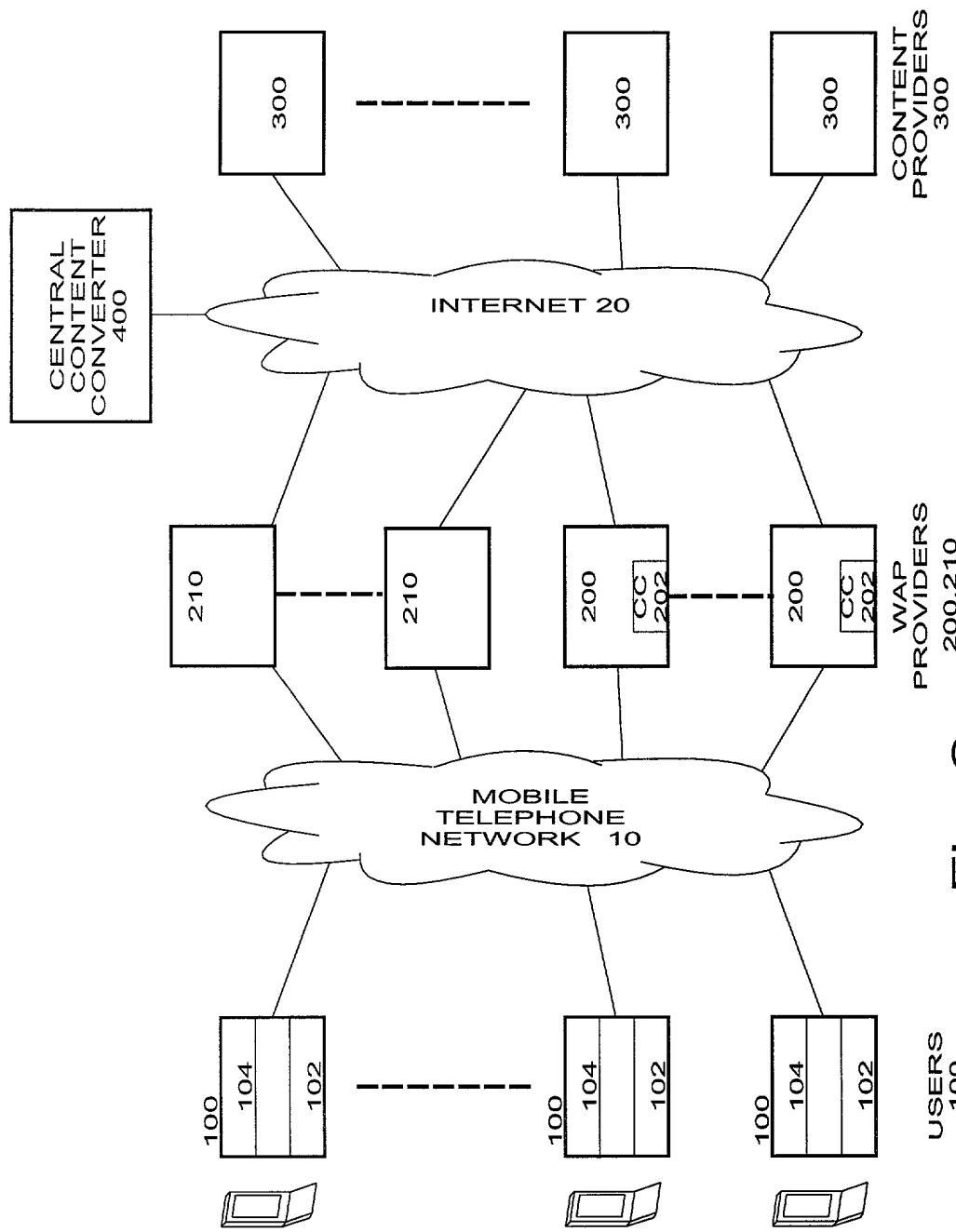


Fig. 2

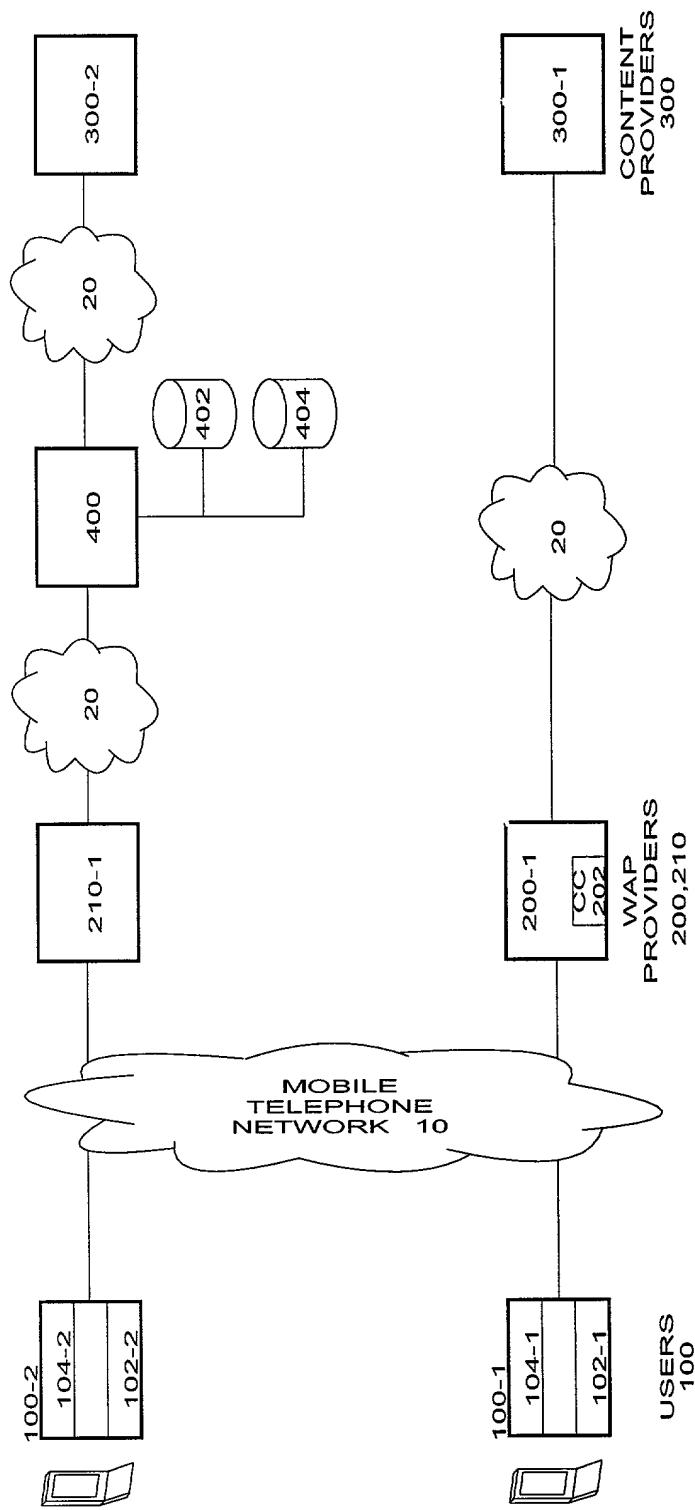


Fig. 3

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

CONTENT CONVERTER PORTAL

the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I also acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37 CFR 1.63(d), which occurred between the filing date of the prior application and the filing date of the continuation-in-part application, if this is a continuation-in-part application.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application:	Country:
	Appln. No.:
	Filed:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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